Déploiement d'un Portail d'Actualités avec Sécurité Renforcé

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Contexte

« Vous devez mettre en place un portail d'actualités en ligne. Ce portail doit permettre aux utilisateurs de lire des articles, de s'inscrire pour recevoir des bulletins d'informations et de soumettre des commentaires. Le portail doit être sécurisé pour protéger les données des utilisateurs et assurer la disponibilité du service. »

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Objectifs :

Mise en Place de l'Infrastructure :

Installer et configurer Ubuntu Server avec Apache2, MySQL, PHP, etc

On a acheté un package VPS de chez OVH qui livre Ubuntu serveur, donc on n'a pas besoin d'installer Ubuntu serveur.

On installe PuTTY et Filezilla, 2 outils qui nous aident à mettre en place notre site web.

L'adresse IP fournie par OVH est : 51.210.242.93

Avec cette adresse IP on se connecte via PuTTY en utilisant cet identifiant et mot de passe :

Utilisateur : ubuntu

Mot de passe : KGscUSa3b6Ks (je ne communique pas ce mot de passe à n'importe qui mais pour cet examen, c'est nécessaire)

Une fois connecté, on procède à installer Apache2, MySQL et PHP avec les commandes suivantes :

Mode connectée sur PuTTY :

```
ubuntu@vps-8bebad92: ~
login as: ubuntu
ubuntu@51.210.242.93's password:
Welcome to Ubuntu 23.04 (GNU/Linux 6.2.0-39-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Wed Jan 17 09:39:56 UTC 2024

  System load:           0.0
  Usage of /:            17.8% of 19.21GB
  Memory usage:          34%
  Swap usage:            0%
  Processes:             104
  Users logged in:       0
  IPv4 address for ens3: 51.210.242.93
  IPv6 address for ens3: 2001:41d0:404:200::4c95

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
   just raised the bar for easy, resilient and secure K8s cluster deployment.

   https://ubuntu.com/engage/secure-kubernetes-at-the-edge
```

Commandes pour installer PHP, phpMyAdmin, Apache2 et MySQL-server

- **sudo apt-get install mysql-server**

```
ubuntu@vps-8bebad92: ~
ubuntu@vps-8bebad92:~$ sudo apt-get install mysql-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  apache2-data apache2-utils augeas-lenses libaugeas0 python3-augeas ssl-cert
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  mysql-server
0 upgraded, 1 newly installed, 0 to remove and 4 not upgraded.
Need to get 0 B/9470 B of archives.
After this operation, 35.8 kB of additional disk space will be used.
Selecting previously unselected package mysql-server.
(Reading database ... 104396 files and directories currently installed.)
Preparing to unpack .../mysql-server_8.0.35-0ubuntu0.23.04.1_all.deb ...
Unpacking mysql-server (8.0.35-0ubuntu0.23.04.1) ...
Setting up mysql-server (8.0.35-0ubuntu0.23.04.1) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.
```

- **sudo apt-get install php libapache2-mod-php php-mysql**

```
ubuntu@vps-8bebad92: ~
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@vps-8bebad92:~$ sudo apt-get install php libapache2-mod-php php-mysql
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
php is already the newest version (2:8.1+92ubuntu1).
libapache2-mod-php is already the newest version (2:8.1+92ubuntu1).
php-mysql is already the newest version (2:8.1+92ubuntu1).
The following packages were automatically installed and are no longer required:
  apache2-data apache2-utils augeas-lenses libaugeas0 python3-augeas ssl-cert
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 4 not upgraded.
ubuntu@vps-8bebad92:~$
```

- **sudo apt-get install phpmyadmin**

ubuntu@vps-8bebad92: ~

```
The following packages will be REMOVED:
  phpmyadmin
0 upgraded, 0 newly installed, 1 to remove and 4 not upgraded.
After this operation, 37.3 MB disk space will be freed.
Do you want to continue? [Y/n] y
(Reading database ... 104398 files and directories currently installed.)
Removing phpmyadmin (4:5.2.1+dfsg-1ubuntu0.1) ...
Determining localhost credentials from /etc/mysql/debian.cnf: succeeded.
dbconfig-common: dumping mysql database phpmyadmin to /var/tmp/phpmyadmin.phpmya
dmin.2024-01-17-09.46.mysql.413FVQ.
dbconfig-common: dropping mysql database phpmyadmin.
dropping database phpmyadmin: success.
verifying database phpmyadmin was dropped: success.
dbconfig-common: revoking privileges for user phpmyadmin on phpmyadmin.
revoking access to database phpmyadmin from phpmyadmin@localhost: success.
ubuntu@vps-8bebad92:~$ sudo apt-get install phpmyadmin
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  apache2-data apache2-utils augeas-lenses libaugeas0 python3-augeas ssl-cert
Use 'sudo apt autoremove' to remove them.
Suggested packages:
  php-recode www-browser php-gd2 php-pragmarx-google2fa-qrcode
  php-bacon-qr-code php-code-lts-u2f-php-server php-web-auth-webauthn-lib
The following NEW packages will be installed:
  phpmyadmin
0 upgraded, 1 newly installed, 0 to remove and 4 not upgraded.
Need to get 0 B/4950 kB of archives.
After this operation, 37.3 MB of additional disk space will be used.
Preconfiguring packages ...
phpmyadmin failed to preconfigure, with exit status 10
```

Assurer la configuration réseau et la sécurité de base du serveur :

Update et upgrade :

```
ubuntu@vps-8bebad92: ~

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
   just raised the bar for easy, resilient and secure K8s cluster deployment.

   https://ubuntu.com/engage/secure-kubernetes-at-the-edge

2 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

New release '23.10' available.
Run 'do-release-upgrade' to upgrade to it.


Last login: Fri Jan 19 12:57:14 2024 from 46.193.7.1
ubuntu@vps-8bebad92:~$ sudo apt update
Hit:1 http://security.ubuntu.com/ubuntu lunar-security InRelease
Hit:2 http://nova.clouds.archive.ubuntu.com/ubuntu lunar InRelease
Hit:3 http://nova.clouds.archive.ubuntu.com/ubuntu lunar-updates InRelease
Hit:4 http://nova.clouds.archive.ubuntu.com/ubuntu lunar-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
2 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@vps-8bebad92:~$
```

```
ubuntu@vps-8bebad92: ~

   just raised the bar for easy, resilient and secure K8s cluster deployment.

   https://ubuntu.com/engage/secure-kubernetes-at-the-edge

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New release '23.10' available.
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Last login: Fri Jan 19 12:57:14 2024 from 46.193.7.1
ubuntu@vps-8bebad92:~$ sudo apt update
Hit:1 http://security.ubuntu.com/ubuntu lunar-security InRelease
Hit:2 http://nova.clouds.archive.ubuntu.com/ubuntu lunar InRelease
Hit:3 http://nova.clouds.archive.ubuntu.com/ubuntu lunar-updates InRelease
Hit:4 http://nova.clouds.archive.ubuntu.com/ubuntu lunar-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
2 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@vps-8bebad92:~$ sudo apt upgarde
E: Invalid operation upgarde
ubuntu@vps-8bebad92:~$
```

Configurer le Pare-feu UFW

ubuntu@vps-8bebad92: ~

```
Hit:2 http://nova.clouds.archive.ubuntu.com/ubuntu lunar InRelease
Hit:3 http://nova.clouds.archive.ubuntu.com/ubuntu lunar-updates InRelease
Hit:4 http://nova.clouds.archive.ubuntu.com/ubuntu lunar-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
2 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@vps-8bebad92:~$ sudo apt upgarde
E: Invalid operation upgarde
ubuntu@vps-8bebad92:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? n
Aborted
ubuntu@vps-8bebad92:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
ubuntu@vps-8bebad92:~$ sudo allow http
sudo: allow: command not found
ubuntu@vps-8bebad92:~$ sudo ufw allow http
Rule added
Rule added (v6)
ubuntu@vps-8bebad92:~$ sudo ufw allow https
Skipping adding existing rule
Skipping adding existing rule (v6)
ubuntu@vps-8bebad92:~$
```

ubuntu@vps-8bebad92: ~

```
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
2 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@vps-8bebad92:~$ sudo apt upgarde
E: Invalid operation upgarde
ubuntu@vps-8bebad92:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? n
Aborted
ubuntu@vps-8bebad92:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
ubuntu@vps-8bebad92:~$ sudo allow http
sudo: allow: command not found
ubuntu@vps-8bebad92:~$ sudo ufw allow http
Rule added
Rule added (v6)
ubuntu@vps-8bebad92:~$ sudo ufw allow https
Skipping adding existing rule
Skipping adding existing rule (v6)
ubuntu@vps-8bebad92:~$ sudo ufw allow ssh
Rule added
Rule added (v6)
ubuntu@vps-8bebad92:~$
```

Déploiement de l'Application Web :

Utiliser une application web open source comme WordPress ou Joomla ou autres, avec des fonctionnalités de blog ou de nouvelles

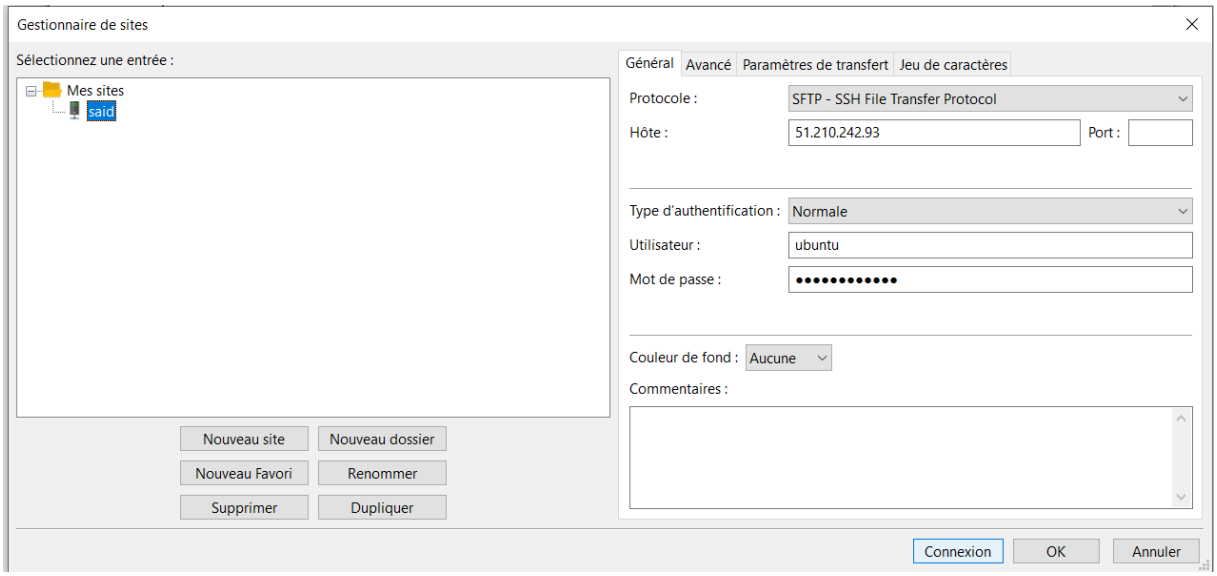
Une fois qu'on installé les outils nécessaires sur notre Ubuntu serveur, on va procéder a déployer notre application web en utilisant WordPress.

Pour télécharger on peut utiliser le site web officiel :

https://fr.wordpress.org/download/

Une fois téléchargé, on extrait les fichiers ZIP.

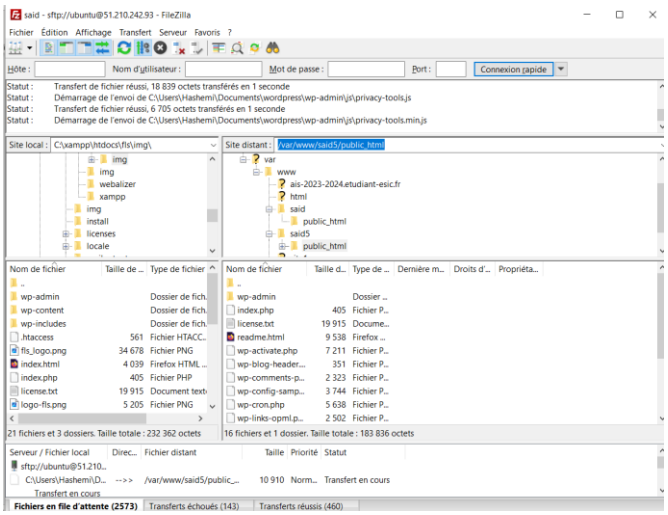
Ensuite on se connecte sur Filezilla, en utilisant l'identifiant : Ubuntu et le mot de passe : KGscUSa3b6Ks



Après la connexion, on dépose notre fichier WordPress, par la fonctionnalité drop-and-draw.

Chemin d'acces au répertoire :

/var/www/said5/public_html

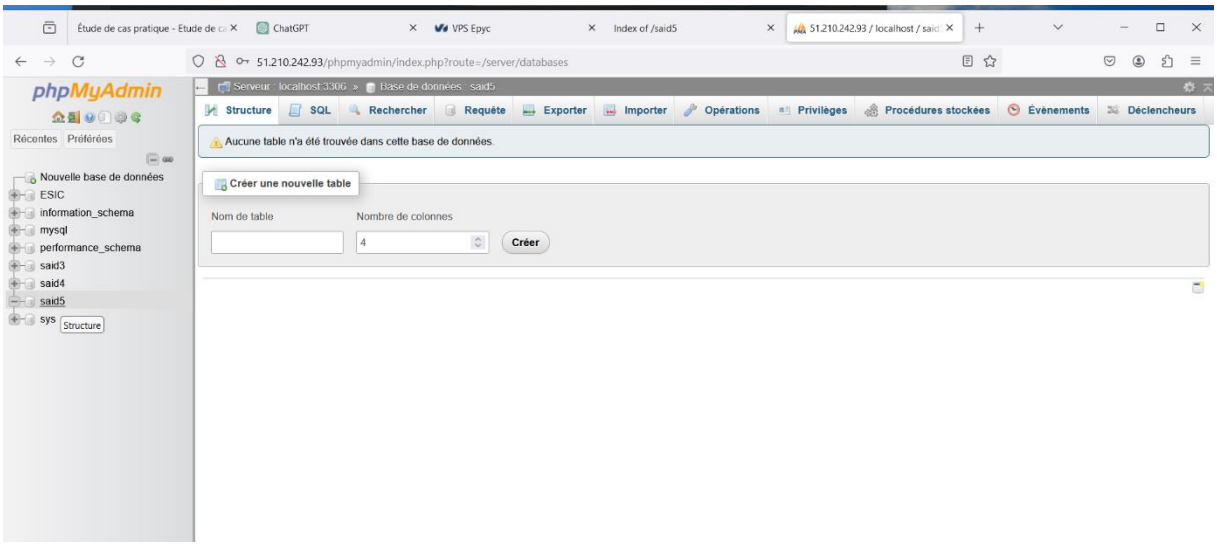


Personnaliser l'apparence pour qu'elle corresponde à un portail d'actualités

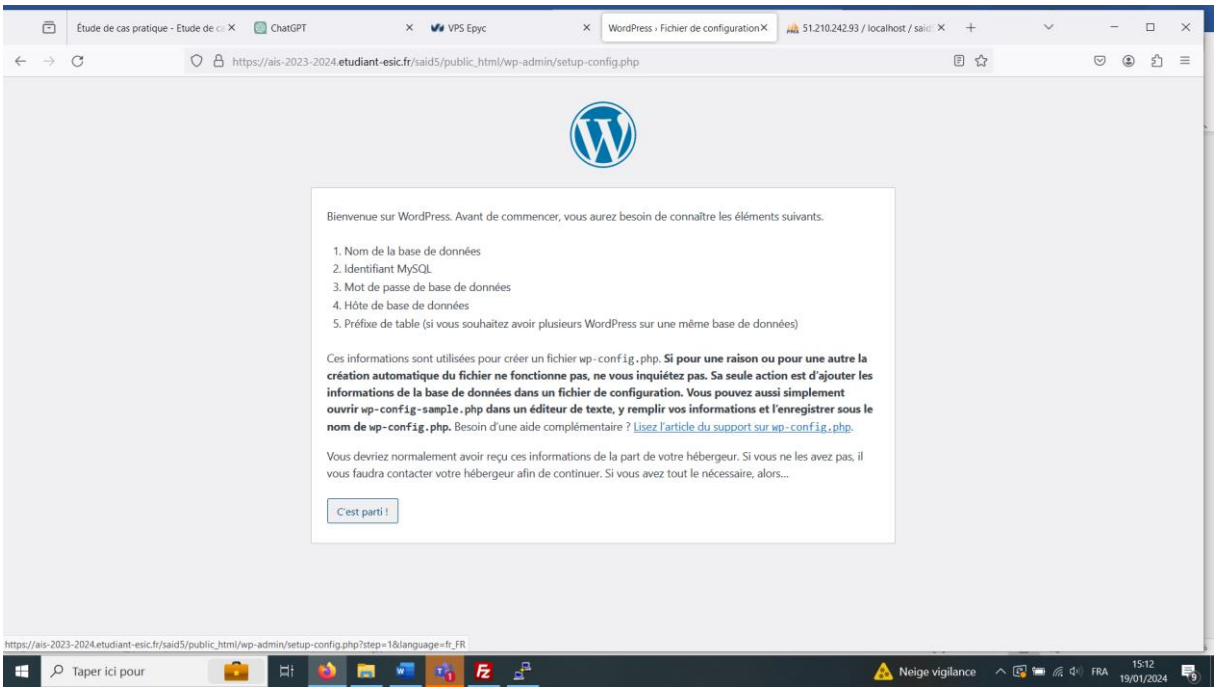
Pour personnaliser l'apparence, on se connecte sur http://51.210.242.93/phpmyadmin/

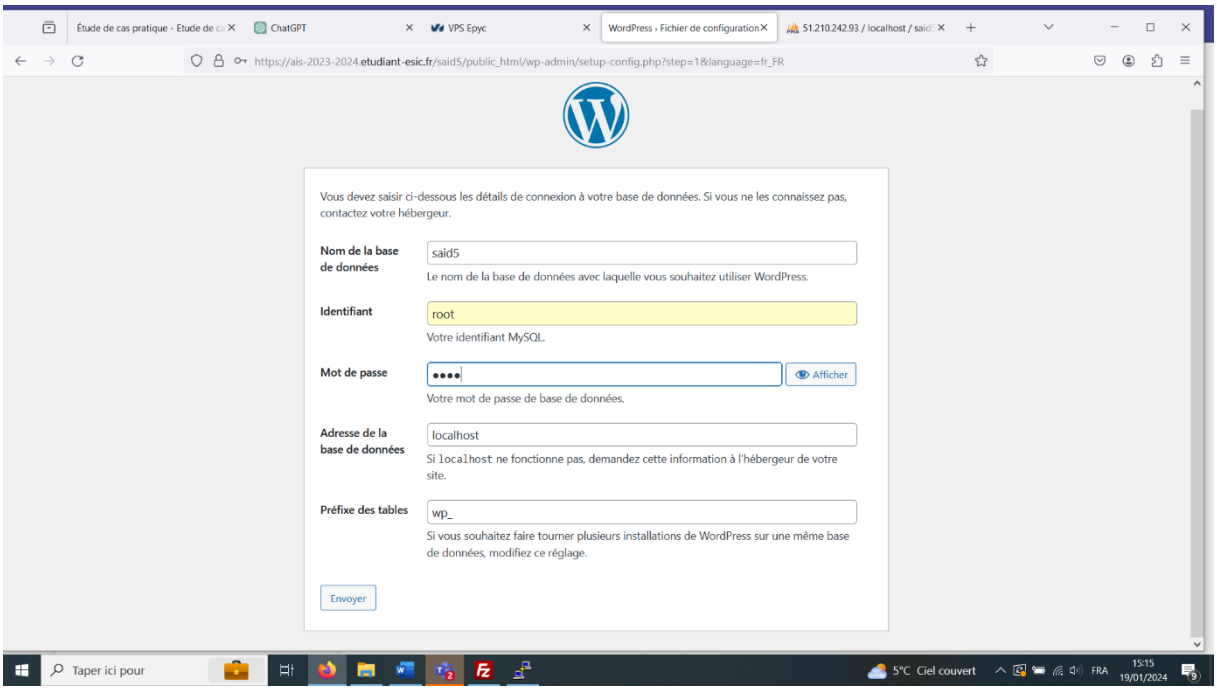
On crée une base de données pour pouvoir poursuivre, on se connecte sur PhpMyAdmin :
Identifiant : root, mot de passe : root

Le nom de base donnée : said5

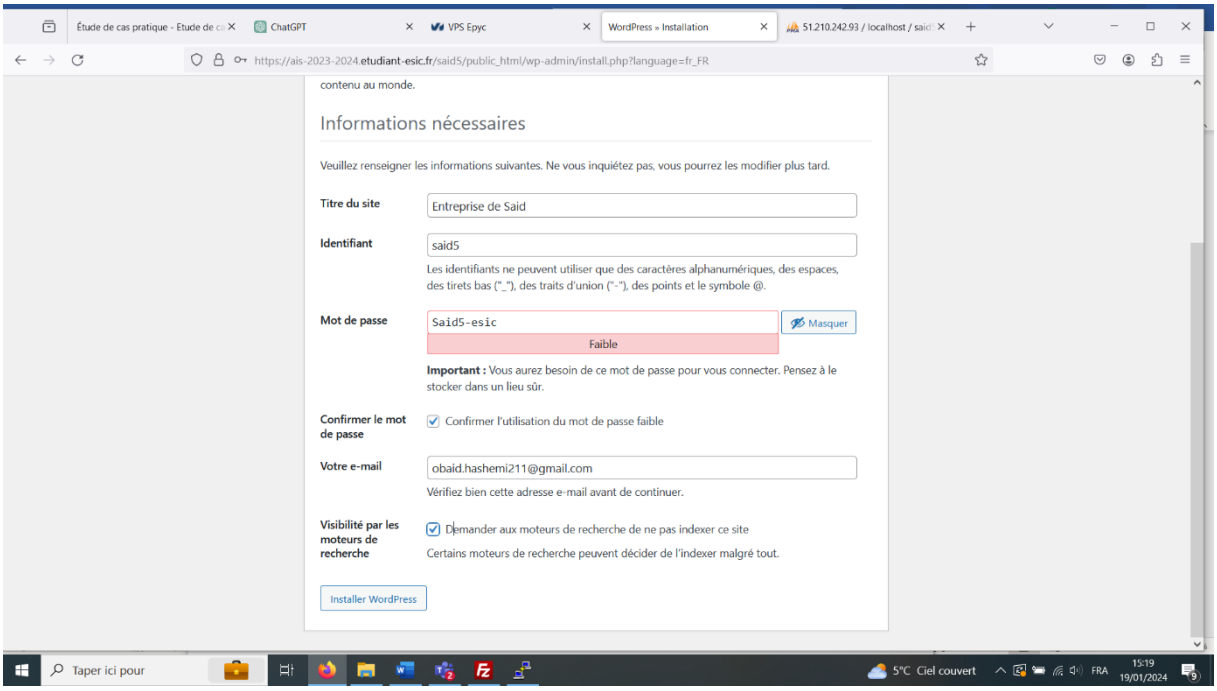


Configurons maintenant le wp-admin.php





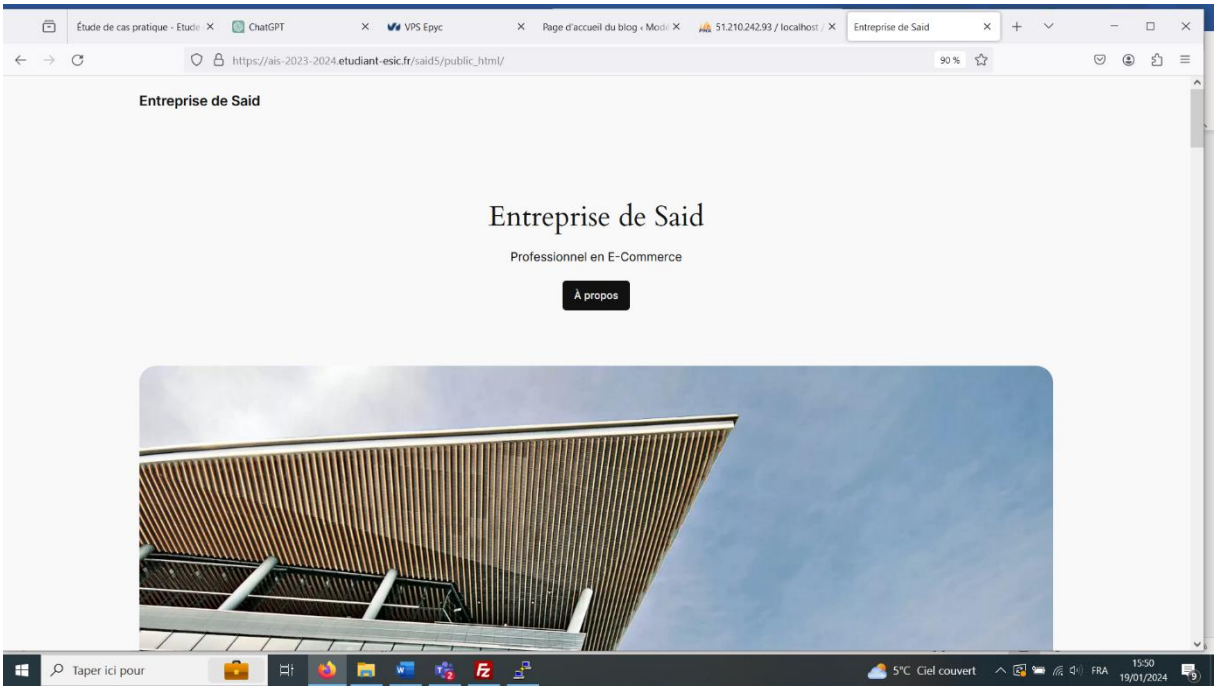
Création de l'espace admin WordPress :



On a créé un espace et effectué des changements sur l'apparence du site web. L'addresse URL de mon site :

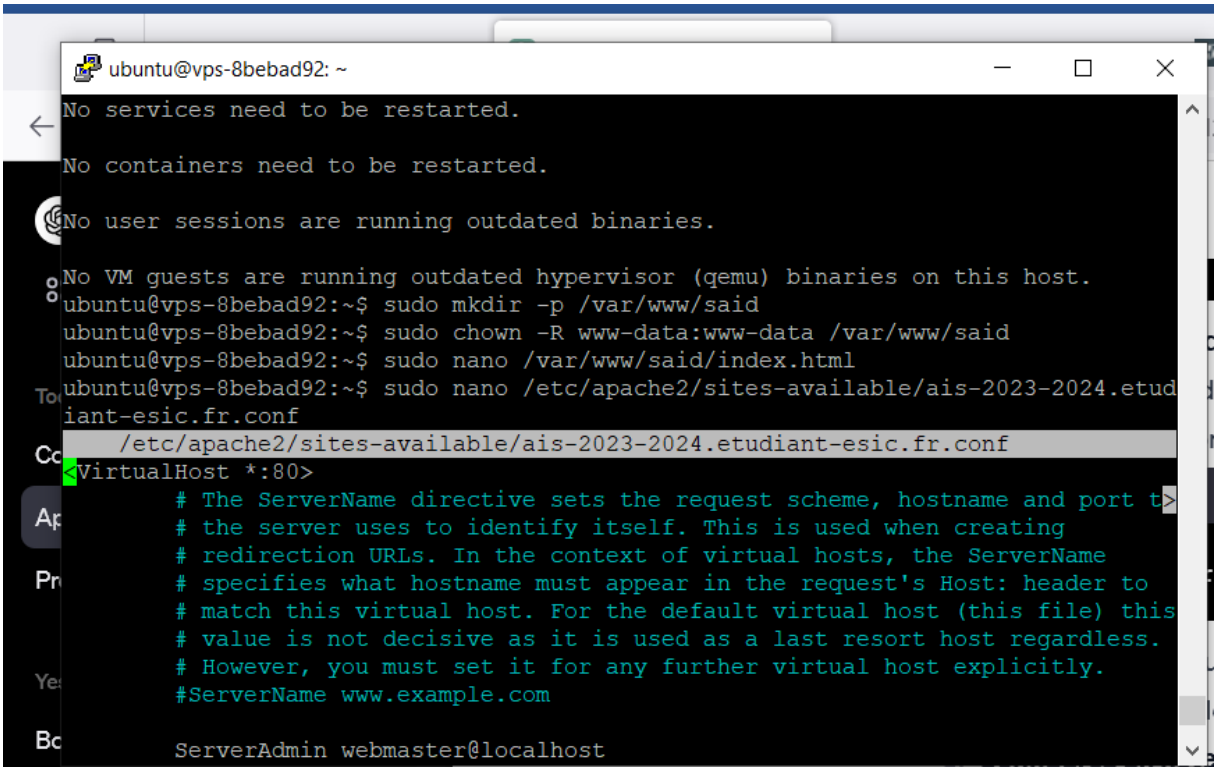
https://www.ais-2023-2024.etudiant-esic.fr/said5/public_html

Apparence de mon site web :



Sécurisation de l'Application et des Données :

Mettre en œuvre des mesures de sécurité pour Apache2 et PHP.



Utiliser HTTPS

Pour réaliser cet effet, on installe certbot.

```
ubuntu@vps-8bebad92: ~
No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@vps-8bebad92:~$ sudo rm /var/lib/apt/lists/lock
ubuntu@vps-8bebad92:~$ sudo rm /var/cache/apt/archives/lock
ubuntu@vps-8bebad92:~$ mysql
ERROR 1045 (28000): Access denied for user 'ubuntu'@'localhost' (using passwo
 NO)
ubuntu@vps-8bebad92:~$ sudo apt install certbot python3-certbot-apache
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
certbot is already the newest version (2.1.0-4).
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser
  python-certbot-apache-doc
The following NEW packages will be installed:
  apache2 python3-certbot-apache
0 upgraded, 2 newly installed, 0 to remove and 4 not upgraded.
Need to get 64.7 kB/162 kB of archives.
After this operation, 806 kB of additional disk space will be used.
Get:1 http://nova.clouds.archive.ubuntu.com/ubuntu lunar/universe amd64 pytho
certbot-apache all 2.1.0-2 [64.7 kB]
Fetched 64.7 kB in 0s (168 kB/s)
Selecting previously unselected package apache2.
(Reading database ... 104398 files and directories currently installed.)
Preparing to unpack .../apache2_2.4.55-1ubuntu2.1_amd64.deb ...
Unpacking apache2 (2.4.55-1ubuntu2.1) ...
Selecting previously unselected package python3-certbot-apache.
Preparing to unpack .../python3-certbot-apache_2.1.0-2_all.deb ...
Unpacking python3-certbot-apache (2.1.0-2) ...
Setting up apache2 (2.4.55-1ubuntu2.1) ...
apache-htcacheclean.service is a disabled or a static unit not running, not s
ting it.
```

```
ubuntu@vps-8bebad92: ~
Processing triggers for install-info (6.8-6build2) ...
Processing triggers for man-db (2.11.2-1) ...
Processing triggers for initramfs-tools (0.142ubuntu2.2) ...
update-initramfs: Generating /boot/initrd.img-6.2.0-39-generic
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@vps-8bebad92:~$ sudo mkdir -p /var/www/said
ubuntu@vps-8bebad92:~$ sudo chown -R www-data:www-data /var/www/said
ubuntu@vps-8bebad92:~$ sudo nano /var/www/said/index.html
ubuntu@vps-8bebad92:~$ sudo nano /etc/apache2/sites-available/ais-2023-2024.etud
iant-esic.fr.conf
ubuntu@vps-8bebad92:~$ sudo a2ensite ais-2023-2024.etudiant-esic.fr.conf
Site ais-2023-2024.etudiant-esic.fr already enabled
ubuntu@vps-8bebad92:~$
```

ubuntu@vps-8bebad92: ~

```
No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@vps-8bebad92:~$ sudo certbot --apache -d etudiant-esic.fr
Saving debug log to /var/log/letsencrypt/letsencrypt.log
Requesting a certificate for etudiant-esic.fr

Certbot failed to authenticate some domains (authenticator: apache). The Certifi
cate Authority reported these problems:
  Domain: etudiant-esic.fr
  Type:   unauthorized
  Detail: 213.186.33.5: Invalid response from http://www.etudiant-esic.fr: "<htm
l xml:lang=\"fr-FR\" lang=\"fr-FR\">\n<head>\n<title qtlid=\"28806\">Félicitatio
ns ! Votre domaine a bien été créé chez OVHclou"

Hint: The Certificate Authority failed to verify the temporary Apache configurat
ion changes made by Certbot. Ensure that the listed domains point to this Apache
 server and that it is accessible from the internet.

Some challenges have failed.
Ask for help or search for solutions at https://community.letsencrypt.org. See t
he logfile /var/log/letsencrypt/letsencrypt.log or re-run Certbot with -v for mo
re details.
ubuntu@vps-8bebad92:~$ sudo rm /var/lib/dpkg/lock
ubuntu@vps-8bebad92:~$  sudo rm /var/lib/dpkg/lock
ubuntu@vps-8bebad92:~$  sudo rm /var/lib/dpkg/lock*
rm: cannot remove '/var/lib/dpkg/lock': No such file or directory
ubuntu@vps-8bebad92:~$: command not found
ubuntu@vps-8bebad92:~$ sudo dpkg --configure -a
ubuntu@vps-8bebad92:~$
```

Sécuriser la base de données MySQL (mot de passe fort, utilisateurs et privilèges, configuration sécurisée)

ubuntu@vps-8bebad92: ~

```
ERROR 1049 (42000): Unknown database 'azerty'
ubuntu@vps-8bebad92:~$ mysql -u
mysql: [ERROR] mysql: option '-u' requires an argument.
ubuntu@vps-8bebad92:~$ mysql -u azerty
ERROR 1045 (28000): Access denied for user 'azerty'@'localhost' (using password:
 NO)
ubuntu@vps-8bebad92:~$ mysql -u azert -p azerty
Enter password:
ERROR 1045 (28000): Access denied for user 'azert'@'localhost' (using password:
YES)
ubuntu@vps-8bebad92:~$ mysql -u azerty -p azerty
Enter password:
ERROR 1049 (42000): Unknown database 'azerty'
ubuntu@vps-8bebad92:~$ mysql -u azerty -p
Enter password:
ERROR 1045 (28000): Access denied for user 'azerty'@'localhost' (using password:
 YES)
ubuntu@vps-8bebad92:~$ mysql -u azerty -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 401
Server version: 8.0.35-0ubuntu0.23.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

Mot de passe fort :

```
ubuntu@vps-8bebad92: ~

New release '23.10' available.
Run 'do-release-upgrade' to upgrade to it.


Last login: Fri Jan 19 14:08:56 2024 from 80.214.96.171
ubuntu@vps-8bebad92:~$ mysql -u azerty -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 217
Server version: 8.0.35-0ubuntu0.23.04.1 (Ubuntu)

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> ALTER USER 'azerty'@'localhost' IDENTIFIED BY 'Azerty123@';
Query OK, 0 rows affected (0.01 sec)

mysql>
```

Sécurisation

```
ubuntu@vps-8bebad92: ~

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> GRANT ALL ON *.* TO 'said1'@'localhost';
Query OK, 0 rows affected (0.01 sec)

mysql> exit
Bye
ubuntu@vps-8bebad92:~$ sudo nano /etc/apache2/sites-available/etudiant-esic.fr.c
onf
ubuntu@vps-8bebad92:~$ sudo systemctl restart apache2
ubuntu@vps-8bebad92:~$ chmod -R 777 /var/www/html/said3
chmod: changing permissions of '/var/www/html/said3': Operation not permitted
chmod: cannot read directory '/var/www/html/said3': Permission denied
ubuntu@vps-8bebad92:~$ chmod: cannot read directory '/var/www/html/said3': Permi
ssion denied
^C
ubuntu@vps-8bebad92:~$ sudo chmod -R 777 /var/www/html/said3
ubuntu@vps-8bebad92:~$ sudo apt-get install phpmyadmin
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
phpmyadmin is already the newest version (4:5.2.1+dfsg-1ubuntu0.1).
0 upgraded, 0 newly installed, 0 to remove and 4 not upgraded.
ubuntu@vps-8bebad92:~$
```

Créer d'utilisateurs et privilèges sur MySQL

```
 NO)
ubuntu@vps-8bebad92:~$ mysql -u azert -p azerty
Enter password:
ERROR 1045 (28000): Access denied for user 'azert'@'localhost' (using password:
YES)
ubuntu@vps-8bebad92:~$ mysql -u azerty -p azerty
Enter password:
ERROR 1049 (42000): Unknown database 'azerty'
ubuntu@vps-8bebad92:~$ mysql -u azerty -p
Enter password:
ERROR 1045 (28000): Access denied for user 'azerty'@'localhost' (using password:
 YES)
ubuntu@vps-8bebad92:~$ mysql -u azerty -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 401
Server version: 8.0.35-0ubuntu0.23.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE USER 'said'@'localhost' IDENTIFIED BY 'said';
ERROR 1396 (HY000): Operation CREATE USER failed for 'said'@'localhost'
mysql> CREATE USER 'said1'@'localhost' IDENTIFIED BY 'said1';
Query OK, 0 rows affected (0.01 sec)

mysql>
```

Privilèges sur MySQL

```
mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.03 sec)

mysql> exit
Bye
ubuntu@vps-8bebad92:~$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.35-0ubuntu0.23.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> GRANT ALL ON *.* TO 'said1'@'localhost';
Query OK, 0 rows affected (0.01 sec)

mysql>
```

```
ubuntu@vps-8bebad92: ~
m path '/var/www/html/index.php') because search permissions are missing on a co
mponent of the path
[Wed Jan 17 12:24:39.395979 2024] [core:error] [pid 108200] (13)Permission denie
d: [client 185.186.91.174:57758] AH00035: access to /index.xhtml denied (filesys
tem path '/var/www/html/index.xhtml') because search permissions are missing on
a component of the path
[Wed Jan 17 12:24:39.396002 2024] [core:error] [pid 108200] (13)Permission denie
d: [client 185.186.91.174:57758] AH00035: access to /index.htm denied (filesyste
m path '/var/www/html/index.htm') because search permissions are missing on a co
mponent of the path
[Wed Jan 17 12:24:39.446761 2024] [core:error] [pid 108200] (13)Permission denie
d: [client 185.186.91.174:57758] AH00035: access to /favicon.ico denied (filesys
tem path '/var/www/html/favicon.ico') because search permissions are missing on
a component of the path, referer: https://ais-2023-2024.etudiant-esic.fr/
[Wed Jan 17 12:25:44.797139 2024] [core:error] [pid 108201] (13)Permission denie
d: [client 185.186.91.174:28484] AH00035: access to /said1/ denied (filesystem p
ath '/var/www/html/said1') because search permissions are missing on a component
 of the path
[Wed Jan 17 12:25:49.750552 2024] [core:error] [pid 108201] (13)Permission denie
d: [client 185.186.91.174:28484] AH00035: access to /said3/ denied (filesystem p
ath '/var/www/html/said3') because search permissions are missing on a component
 of the path
[Wed Jan 17 12:25:49.804534 2024] [core:error] [pid 108201] (13)Permission denie
d: [client 185.186.91.174:28484] AH00035: access to /favicon.ico denied (filesys
tem path '/var/www/html/favicon.ico') because search permissions are missing on
a component of the path, referer: https://ais-2023-2024.etudiant-esic.fr/said3/
[Wed Jan 17 12:27:58.601631 2024] [core:error] [pid 108200] (13)Permission denie
d: [client 185.186.91.174:44986] AH00035: access to /said3/ denied (filesystem p
ath '/var/www/html/said3') because search permissions are missing on a component
 of the path
[Wed Jan 17 12:27:58.657058 2024] [core:error] [pid 108200] (13)Permission denie
d: [client 185.186.91.174:44986] AH00035: access to /favicon.ico denied (filesys
tem path '/var/www/html/favicon.ico') because search permissions are missing on
a component of the path, referer: https://ais-2023-2024.etudiant-esic.fr/said3/
[Wed Jan 17 12:25:49.750552 2024] [core:error] [pid 108201] (13)Permission denie
d: [client 185.186.91.174:28484] AH00035: access to /said3/ denied (filesystem p
ath '/var/www/html/said3') because search permissions are missing on a component
 of the path
sudo chmod +x /var
sudo chmod +x /var/www
sudo chmod +x /var/www/html
sudo chmod +x /var/www/html/said3^C
ubuntu@vps-8bebad92:~$ sudo chmod +x /var
sudo chmod +x /var/www
sudo chmod +x /var/www/html
sudo chmod +x /var/www/html/said3
ubuntu@vps-8bebad92:~$ sudo chmod +x /var
ubuntu@vps-8bebad92:~$ sudo chmod +x /var/www
ubuntu@vps-8bebad92:~$ sudo chmod +x /var/www/html/said3
```

Certificat SSL

Pour réaliser cet effet, on installe certbot.

```
ubuntu@vps-8bebad92: ~
No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@vps-8bebad92:~$ sudo rm /var/lib/apt/lists/lock
ubuntu@vps-8bebad92:~$ sudo rm /var/cache/apt/archives/lock
ubuntu@vps-8bebad92:~$ mysql
ERROR 1045 (28000): Access denied for user 'ubuntu'@'localhost' (using passwo
 NO)
ubuntu@vps-8bebad92:~$ sudo apt install certbot python3-certbot-apache
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
certbot is already the newest version (2.1.0-4).
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser
  python-certbot-apache-doc
The following NEW packages will be installed:
  apache2 python3-certbot-apache
0 upgraded, 2 newly installed, 0 to remove and 4 not upgraded.
Need to get 64.7 kB/162 kB of archives.
After this operation, 806 kB of additional disk space will be used.
Get:1 http://nova.clouds.archive.ubuntu.com/ubuntu lunar/universe amd64 pytho
certbot-apache all 2.1.0-2 [64.7 kB]
Fetched 64.7 kB in 0s (168 kB/s)
Selecting previously unselected package apache2.
(Reading database ... 104398 files and directories currently installed.)
Preparing to unpack .../apache2_2.4.55-1ubuntu2.1_amd64.deb ...
Unpacking apache2 (2.4.55-1ubuntu2.1) ...
Selecting previously unselected package python3-certbot-apache.
Preparing to unpack .../python3-certbot-apache_2.1.0-2_all.deb ...
Unpacking python3-certbot-apache (2.1.0-2) ...
Setting up apache2 (2.4.55-1ubuntu2.1) ...
apache-htcacheclean.service is a disabled or a static unit not running, not s
ting it.
```

ubuntu@vps-8bebad92: ~

```
apache-htcacheclean.service is a disabled or a static unit not running, not star
ting it.
Setting up python3-certbot-apache (2.1.0-2) ...
Processing triggers for man-db (2.11.2-1) ...
Processing triggers for ufw (0.36.1-4.1ubuntu0.1) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@vps-8bebad92:~$ sudo certbot --apache -d etudiant-esic.fr
Saving debug log to /var/log/letsencrypt/letsencrypt.log
Requesting a certificate for etudiant-esic.fr

Certbot failed to authenticate some domains (authenticator: apache). The Certifi
cate Authority reported these problems:
  Domain: etudiant-esic.fr
  Type:   unauthorized
  Detail: 213.186.33.5: Invalid response from http://www.etudiant-esic.fr: "<htm
l xml:lang=\"fr-FR\" lang=\"fr-FR\">\n<head>\n<title qtlid=\"28806\">Félicitatio
ns ! Votre domaine a bien été créé chez OVHclou"

Hint: The Certificate Authority failed to verify the temporary Apache configurat
ion changes made by Certbot. Ensure that the listed domains point to this Apache
 server and that it is accessible from the internet.
```

ubuntu@vps-8bebad92: ~

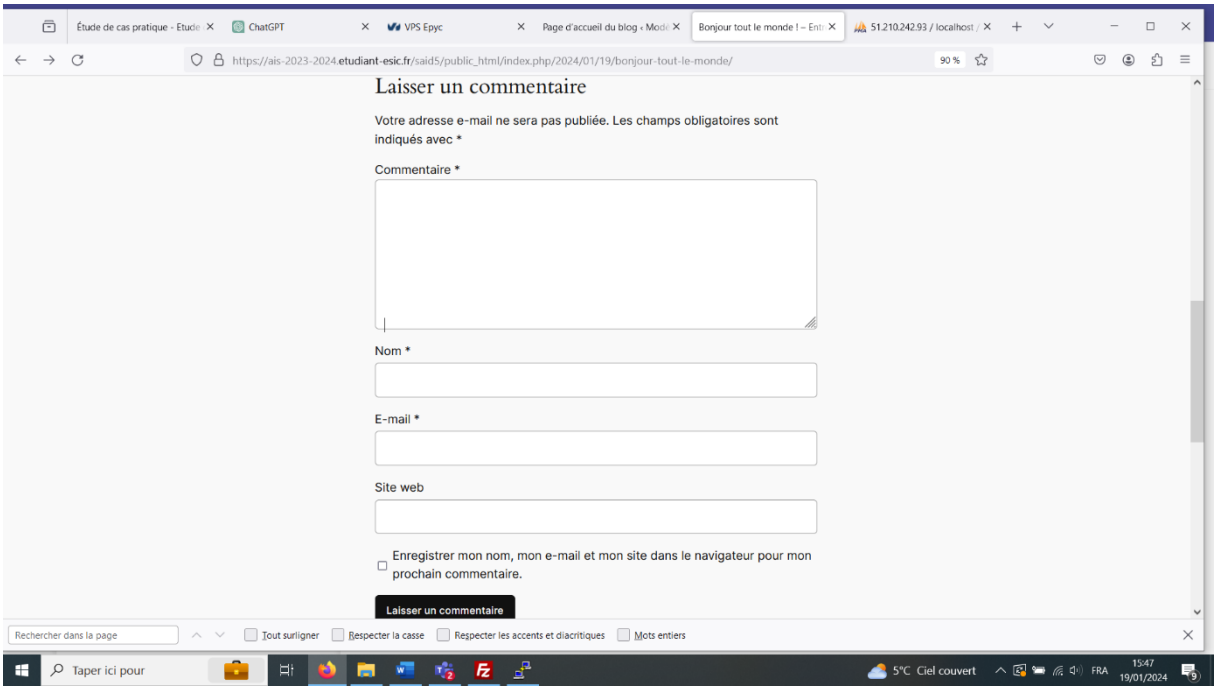
```
No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@vps-8bebad92:~$ sudo certbot --apache -d etudiant-esic.fr
Saving debug log to /var/log/letsencrypt/letsencrypt.log
Requesting a certificate for etudiant-esic.fr

Certbot failed to authenticate some domains (authenticator: apache). The Certifi
cate Authority reported these problems:
  Domain: etudiant-esic.fr
  Type:   unauthorized
  Detail: 213.186.33.5: Invalid response from http://www.etudiant-esic.fr: "<htm
l xml:lang=\"fr-FR\" lang=\"fr-FR\">\n<head>\n<title qtlid=\"28806\">Félicitatio
ns ! Votre domaine a bien été créé chez OVHclou"

Hint: The Certificate Authority failed to verify the temporary Apache configurat
ion changes made by Certbot. Ensure that the listed domains point to this Apache
 server and that it is accessible from the internet.

Some challenges have failed.
Ask for help or search for solutions at https://community.letsencrypt.org. See t
he logfile /var/log/letsencrypt/letsencrypt.log or re-run Certbot with -v for mo
re details.
ubuntu@vps-8bebad92:~$ sudo rm /var/lib/dpkg/lock
ubuntu@vps-8bebad92:~$  sudo rm /var/lib/dpkg/lock
ubuntu@vps-8bebad92:~$  sudo rm /var/lib/dpkg/lock*
rm: cannot remove '/var/lib/dpkg/lock': No such file or directory
ubuntu@vps-8bebad92:~$: command not found
ubuntu@vps-8bebad92:~$ sudo dpkg --configure -a
ubuntu@vps-8bebad92:~$
```

Fonctionnalités Utilisateur

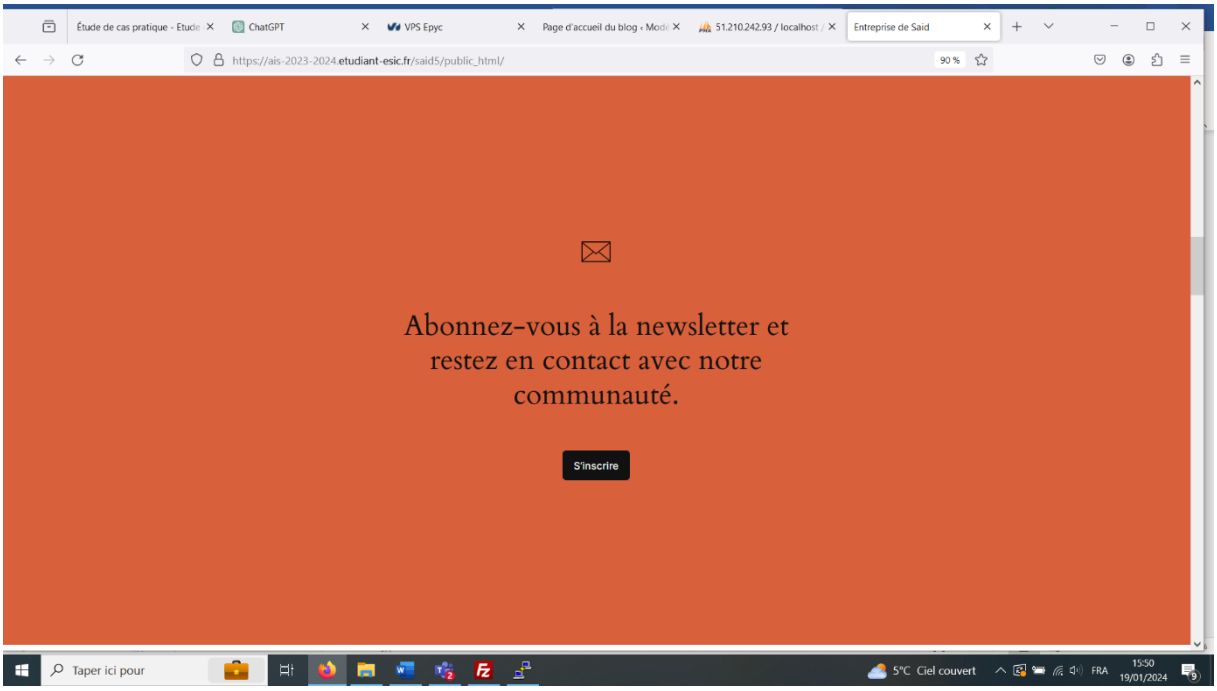
Configurer l'inscription des utilisateurs et la fonctionnalité de bulletin d'information.

Mettre en place un système de commentaires pour les articles, avec modération.

Laisser un commentaire



S’abonner pour les clients via un formulaire



Optimisation et Surveillance :

Mettre en place des systèmes de cache (comme APCu pour PHP) pour améliorer les performances.

On doit d'abord installer les outils nécessaire pour APCu et PECL :

```
ubuntu@vps-8bebad92: ~
Last login: Fri Jan 19 15:06:09 2024 from 80.214.96.171
ubuntu@vps-8bebad92:~$ sudo pecl install apcu
sudo: pecl: command not found
ubuntu@vps-8bebad92:~$ sudo apt update
Hit:1 http://security.ubuntu.com/ubuntu lunar-security InRelease
Hit:2 http://nova.clouds.archive.ubuntu.com/ubuntu lunar InRelease
Hit:3 http://nova.clouds.archive.ubuntu.com/ubuntu lunar-updates InRelease
Hit:4 http://nova.clouds.archive.ubuntu.com/ubuntu lunar-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
2 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@vps-8bebad92:~$ sudo apt install php-dev php-pear build-essential libpcre
3-dev
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  autoconf automake autopoint autotools-dev bzip2 cpp cpp-12 debhelper
  debugedit dh-autoreconf dh-strip-nondeterminism dpkg-dev dwz fakeroot g++
  g++-12 gcc gcc-12 gcc-12-base gettext intltool-debian libalgorithm-diff-perl
  libalgorithm-diff-xs-perl libalgorithm-merge-perl libarchive-cpio-perl
  libarchive-zip-perl libasan8 libatomic1 libc-dev-bin libc-devtools libc6-dev
  libcc1-0 libcrypt-dev libdebhelper-perl libdpkg-perl libfakeroot
```

Si un problème, il faut nettoyer le cache par sudo rm :

```
ubuntu@vps-8bebad92: ~
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is he
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is he
ld by process 2948 (apt)
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is he
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is he
ld by process 2948 (apt)
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is he
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is he
ld by process 2948 (apt)
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is he
^C by process 2948 (apt)... 72s
ubuntu@vps-8bebad92:~$ ps aux | grep -i apt
root        2946  0.0  0.2  10956  4992 pts/2    S+   15:28   0:00 sudo apt inst
all php-dev php-pear build-essential libpcre3-dev
root        2947  0.0  0.0  10956  1904 pts/3    Ss   15:28   0:00 sudo apt inst
all php-dev php-pear build-essential libpcre3-dev
root        2948  0.0  3.5  80788 70092 pts/3    S+   15:28   0:00 apt install p
hp-dev php-pear build-essential libpcre3-dev
ubuntu      3652  0.0  0.1   6868  2176 pts/4    S+   15:41   0:00 grep --color=
auto -i apt
ubuntu@vps-8bebad92:~$ sudo rm /var/lib/dpkg/lock-frontend
ubuntu@vps-8bebad92:~$ sudo rm /var/lib/dpkg/lock
ubuntu@vps-8bebad92:~$ sudo dpkg --configure -a
ubuntu@vps-8bebad92:~$ sudo apt update
```

```
ubuntu@vps-8bebad92: ~
  libalgorithm-diff-xs-perl libalgorithm-merge-perl libarchive-cpio-perl
  libarchive-zip-perl libasan8 libatomic1 libc-dev-bin libc-devtools libc6-dev
  libcc1-0 libcrypt-dev libdebhelper-perl libdpkg-perl libfakeroot
  libfile-fcntllock-perl libfile-stripnondeterminism-perl libgcc-12-dev
  libgomp1 libisl23 libitm1 liblsan0 libltdl-dev libltdl7
  libmail-sendmail-perl libmpc3 libnsl-dev libpcre16-3 libpcre2-16-0
  libpcre2-32-0 libpcre2-dev libpcre2-posix3 libpcre3 libpcre32-3
  libpcrecpp0v5 libpkgconf3 libquadmath0 libssl-dev libstdc++-12-dev
  libsub-override-perl libsys-hostname-long-perl libtirpc-dev libtool libtsan2
  libubsan1 linux-libc-dev lto-disabled-list m4 make manpages-dev php8.1-dev
  pkg-config pkg-php-tools pkgconf pkgconf-bin po-debconf rpcsvc-proto shtool
Suggested packages:
  autoconf-archive gnu-standards autoconf-doc bzip2-doc cpp-doc gcc-12-locales
  cpp-12-doc dh-make debian-keyring g++-multilib g++-12-multilib gcc-12-doc
  gcc-multilib flex bison gdb gcc-doc gcc-12-multilib gettext-doc
  libasprintf-dev libgettextpo-dev glibc-doc bzr libtool-doc libssl-doc
  libstdc++-12-doc gfortran | fortran95-compiler gcj-jdk m4-doc make-doc
  dh-php libmail-box-perl
E: Could not get lock /var/cache/apt/archives/lock. It is held by process 2948 (
apt)
N: Be aware that removing the lock file is not a solution and may break your sys
tem.
E: Unable to lock directory /var/cache/apt/archives/
ubuntu@vps-8bebad92:~$ sudo pecl install apcu
```

Installer des outils de surveillance du serveur (comme Nagios ou Monit).

```
ubuntu@vps-8bebad92: ~
Hit:4 http://nova.clouds.archive.ubuntu.com/ubuntu lunar-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
2 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@vps-8bebad92:~$ sudo apt install nagios4 nagios-plugins-contrib nagios-nr
pe-plugin
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  bsd-mailx debsecan fonts-lato freeipmi-common freeipmi-tools
  libauthen-sasl-perl libavahi-client3 libavahi-common-data libavahi-common3
  libb-hooks-op-check-perl libbytes-random-secure-perl libcapture-tiny-perl
  libclass-accessor-perl libconfig-tiny-perl libcrypt-random-seed-perl
  libcrypt-ssleay-perl libcups2 libdata-dump-perl libdata-validate-domain-perl
  libdata-validate-ip-perl libdate-manip-perl libdbd-mysql-perl libdbi-perl
  libdbi1 libdevel-callchecker-perl libdigest-bubblebabble-perl
  libdigest-hmac-perl libdynaloader-functions-perl libfile-listing-perl
  libfont-afm-perl libfreeipmi17 libhashkit2 libhtml-form-perl
  libhtml-format-perl libhtml-tree-perl libhttp-cookies-perl
  libhttp-daemon-perl libhttp-negotiate-perl libidn12 libio-pty-perl
  libio-socket-ssl-perl libio-socket-timeout-perl libipc-run-perl
  libipmiconsole2 libipmidetect0 libldb2 liblockfile-bin liblockfile1
```

Après avoir installé le lib . Sur les systèmes CentOS/RHEL, nous devons peut-être activer EPEL (Extra Packages for Enterprise Linux) et utiliser yum :

```
ubuntu@vps-8bebad92: ~
  python3-pymongo python3-pymongo-ext python3-samba python3-talloc python3-tdb
  rake rpcbind ruby ruby-net-telnet ruby-rubygems ruby-sdbm ruby-webrick
  ruby-xmlrpc ruby3.1 rubygems-integration samba-common samba-common-bin
  samba-dsdb-modules samba-libs smbclient snmp unzip whois zip
Suggested packages:
  freeipmi-bmc-watchdog freeipmi-ipmidetect libgssapi-perl cups-common
  libmldbm-perl libnet-daemon-perl libsql-statement-perl libcrypt-des-perl
  libio-socket-inet6-perl libscalar-number-perl lm-sensors
  snmp-mibs-downloader libauthen-ntlm-perl libxml-sax-expatxs-perl icinga2
  backuppc perl-doc libsys-virt-perl cciss-vol-status mpt-status smstools
  expect nagios-plugin-check-multi moreutils percona-toolkit python3-boto
  fping qstat debhelper procmail postfix-mysql postfix-pgsql postfix-ldap
  postfix-pcre postfix-lmdb postfix-sqlite sasl2-bin | dovecot-common
  postfix-cdb postfix-mta-sts-resolver postfix-doc python-pymongo-doc ri
  ruby-dev bundler heimdal-clients python3-markdown python3-dnspython
  cifs-utils
E: Could not get lock /var/cache/apt/archives/lock. It is held by process 2948 (
apt)
N: Be aware that removing the lock file is not a solution and may break your sys
tem.
E: Unable to lock directory /var/cache/apt/archives/
ubuntu@vps-8bebad92:~$ sudo yum install epel-release
sudo: yum: command not found
ubuntu@vps-8bebad92:~$ sudo yum install nagios
```

Tâches de Sauvegarde et de Récupération :

Configurer les sauvegardes automatiques du système et de la base de données.

Sauvegarde de système :

```
ubuntu@vps-8bebad92: ~
  libmldbm-perl libnet-daemon-perl libsql-statement-perl libcrypt-des-perl
  libio-socket-inet6-perl libscalar-number-perl lm-sensors
  snmp-mibs-downloader libauthen-ntlm-perl libxml-sax-expatxs-perl icinga2
  backuppc perl-doc libsys-virt-perl cciss-vol-status mpt-status smstools
  expect nagios-plugin-check-multi moreutils percona-toolkit python3-boto
  fping qstat debhelper procmail postfix-mysql postfix-pgsql postfix-ldap
  postfix-pcre postfix-lmdb postfix-sqlite sasl2-bin | dovecot-common
  postfix-cdb postfix-mta-sts-resolver postfix-doc python-pymongo-doc ri
  ruby-dev bundler heimdal-clients python3-markdown python3-dnspython
  cifs-utils
E: Could not get lock /var/cache/apt/archives/lock. It is held by process 2948 (
apt)
N: Be aware that removing the lock file is not a solution and may break your sys
tem.
E: Unable to lock directory /var/cache/apt/archives/
ubuntu@vps-8bebad92:~$ sudo yum install epel-release
sudo: yum: command not found
ubuntu@vps-8bebad92:~$ sudo yum install nagios
sudo: yum: command not found
ubuntu@vps-8bebad92:~$ tar -czf /path/to/backup/directory/backup-$(date +%Y%m%d)
.tar.gz /home /etc /var
tar: Removing leading `/' from member names
tar: Removing leading `/' from hard link targets
tar (child): /path/to/backup/directory/backup-20240119.tar.gz: Cannot open: No s
```

Sauvegarde de la base de donées :

```
ubuntu@vps-8bebad92: ~
E: Could not get lock /var/cache/apt/archives/lock. It is held by process 2948 (
apt)
N: Be aware that removing the lock file is not a solution and may break your sys
tem.
E: Unable to lock directory /var/cache/apt/archives/
ubuntu@vps-8bebad92:~$ sudo yum install epel-release
sudo: yum: command not found
ubuntu@vps-8bebad92:~$ sudo yum install nagios
sudo: yum: command not found
ubuntu@vps-8bebad92:~$ tar -czf /path/to/backup/directory/backup-$(date +%Y%m%d)
.tar.gz /home /etc /var
tar: Removing leading `/' from member names
tar: Removing leading `/' from hard link targets
tar (child): /path/to/backup/directory/backup-20240119.tar.gz: Cannot open: No s
uch file or directory
tar (child): Error is not recoverable: exiting now
tar: /path/to/backup/directory/backup-20240119.tar.gz: Cannot write: Broken pipe
tar: Child returned status 2
tar: Error is not recoverable: exiting now
ubuntu@vps-8bebad92:~$ mysqldump -u [username] -p[password] [database_name] > /p
ath/to/backup/db_backup-$(date +%Y%m%d).sql
-bash: /path/to/backup/db_backup-20240119.sql: No such file or directory
ubuntu@vps-8bebad92:~$ mysqldump -u root  -p root said5 > /path/to/backup/db_bac
kup-$(date +%Y%m%d).sql
```

Documenter un plan de récupération en cas de panne

En tant que responsable de la gestion des données dans notre organisation, j'ai établi un plan de récupération pour assurer la sécurité et la disponibilité de nos systèmes et données. Voici les points clés de ce plan :

1. **Plan de Récupération** :
    - **Inventaire** : J'ai listé tous nos systèmes et données critiques.
    - **Procédures de Récupération** : J'ai détaillé les étapes pour restaurer nos systèmes et données à partir des sauvegardes.
    - **Tests Réguliers** : Je m'assure régulièrement de l'efficacité de nos sauvegardes par des tests de récupération.
2. **Gestion des Sauvegardes** :
    - J'ai sécurisé nos sauvegardes dans des emplacements accessibles, y compris hors site et dans le cloud pour une meilleure résilience.
3. **Maintenance et Amélioration Continue** :
    - Je mets à jour régulièrement le plan pour refléter les évolutions de notre infrastructure et incorpore les leçons apprises des incidents passés.

Bonnes Pratiques :

- J'utilise l'automatisation pour minimiser les erreurs, surveille constamment les sauvegardes pour détecter les échecs, assure la sécurité des données sauvegardées, et maintiens une documentation claire et accessible.

Ce plan est essentiel pour garantir la continuité de nos opérations et protéger nos actifs numériques.

Critères de Réussite :

Vous pouvez accéder a mon site via ce lien :

https://ais-2023-2024.etudiant-esic.fr/said5/public_html/